This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

THE

[illegible]

READER

1882

FIRST STANDARD
GEOGRAPHICAL READER

WITH NUMEROUS ILLUSTRATIONS

LONDON
WM. ISBISTER, LIMITED
56, LUDGATE HILL
1883

2017. f. 36

BODLEI
22 OCT 85
OXFO

LONDON:
PRINTED BY J. S. VIRTUE AND CO., LIMITED,
CITY ROAD.

CONTENTS.

PART I.

Lesson		Page
I.	THE BOAT ON THE POND.—PART I.	1
II.	„ „ PART II.	3
III.	THE ISLAND IN THE POND	6
IV.	ALONE ON AN ISLAND.—PART I.	9
V.	„ „ PART II.	13
VI.	THE SNAIL'S MARCH	17
VII.	FROM FARM TO FARM	19
VIII.	ROADS, HEDGES, DITCHES, BANKS	22
IX.	A STORM IN THE FIELDS	24
X.	THE GIFT OF THE CLOUDS	27
XI.	GOD'S WATERWORKS	30
XII.	THE CLOUDS AND THE WIND—ICE, SNOW, HAIL	33
XIII.	THE SWOLLEN STREAM	36
XIV.	PEBBLES	39
XV.	THE WORK OF RIVERS.—PART I.	43
XVI.	„ „ PART II.	45
XVII.	THE FAR-AWAY LAND	48
XVIII.	CHANGES OF THE LAND	52
XIX.	AN HOUR IN THE WOOD	56

Lesson Page
XX. Walking in the Mud 59
XXI. The Garden Paths 62
XXII. The Four Seasons 64
XXIII. North, South, East, and West.—Part I. 67
XXIV. " " " Part II. . 70
XXV. " " " Part III. . 72
XXVI. " " " Part IV. . 75

PART II.

XXVII. The Size and Shape of a Field . . . 78
XXVIII. Complete Plan of a Field 81
XXIX. Picture of the Schoolroom Wall . . . 83
XXX. Plan of the Schoolroom Floor . . . 87
XXXI. Plan of the Flower Garden 91
XXXII. Plan of the Village School and Playground 95
XXXIII. Plan of the Village 99
XXXIV. Map of the Village and other Places around 103
XXXV. General Maps 107

PART I.

LESSON I.

THE BOAT ON THE POND—(1). [*Trade.*

Mr. Goodman had two sons, one named George, and one named Fred. One bright day he said to the boys: "Come, let us take a walk in the green fields, for the sun is warm, the sky is clear, and the air is sweet."

Fred said he would like to take his boat, and let it sail on the large pond which was not far from their house.

"Yes," said the boys' father, "you may bring your boat; and then you can play at trade."

"What sort of a game is that?" asked George. "I have never heard of it before."

"I have seen you play at shop with Emma and Mary," said his father.

"Oh, but that was when I was quite a little boy!" cried George.

"Well," said Mr. Goodman, "the game of trade is something like shop; only it is for big boys and girls to play at."

"And men, too?" asked Fred, who was a sharp lad. "Is not that what you play at all day when you go to market?"

"If you like to call it play," said his father; "but I find it hard work. Now what I want to show you is play."

"And how shall we play it?" asked George. His father told him to wait, and he should see. Then he did something very odd. He picked up some bits of coal and put them in a paper-bag. In another bag he put some tea. He also took some nuts and bits of silk.

Fred and George thought this very strange, and wanted much to know what this new game was. But they had to wait till they came to the pond.

---

fields
bright
boat
odd
silk
strange

---

fa'-ther **mar'-ket**

LESSON II.

THE BOAT ON THE POND—(2). [*Trade.*]

WHEN they came to the water-side, the father told his sons that to play at trade they must pretend that the large pond was the sea. "George," he said, "you might go round to the other side of the pond, as if you lived across the sea, in a land where there is no coal to make fires of."

The boy raced to the other side, and tried to think he was across the sea. Fred set the sails of his boat, and put a small red flag on one of the masts to make it look smart.

"Now," Mr. Goodman said, "we have a great deal of coal in this land; but men in some parts across the sea have none. I have brought some small bits of coal from home; we will put them in the boat and send them to George on the other side of the pond."

Then Fred put the boat on the pond; and the wind blew the sails, which drove the boat along. At last the wind ceased to blow, and the small ship could not move. Poor Fred thought he might not get his boat back; but soon a breeze rose and took it to the other side. "There," said his father, "now it has come to shore."

"What do you mean by *shore?*" asked the boy.

"The bank is the shore," Mr. Goodman said. "When ships sail on the sea they may stop for want of wind to blow on their sails—that is known as a calm. Most ships now are moved by steam, and do not need the wind."

George took the bits of coal out of the boat, and put in their place some tea and nuts and a few scraps of silk, which his father had given to him. Then he turned the sails half way round, and set the boat on the pond, so that it went back to Fred.

"This," said the father, "is called *trade.* We send coal, and tin, and iron, and boots, and other things across the sea to men who have none; and those men send back tea and silk and nuts to us."

By-and-by Fred and George found other things—such as seeds and flowers—to send to each other over the pond. So they kept on the game of trade till it was quite late.

The boys said they would like, when they grew to be men, to go across the sea, to learn how men lived in other lands.

round
coal
fires
brought
blew
grew

pre-tend′ **a-cross′**

Learn.

In trade men change things that they have for other things that they want more. A great deal of trade goes on.

A LAKE.

LESSON III.

THE ISLAND IN THE POND. [*Islands and Lakes.*]

Mr. Goodman and his sons went once more to the field to look at the pond or lake, and they saw that the water was held in its place by banks of land.

"You see," said the father, "*that a lake is water with land round it.*"

Then he asked, "Do you see a piece of land in the middle of the pond? What do you call that?"

The boys had heard it called an *island.*

"But," Mr. Goodman asked, "what do you see round the edge of the island?"

"Water," was the reply of one of the boys.

"Then," said their father, "you now know *that an island is land with water round it,* and *a pond or lake is water with land round it.*"

Fred asked then what they called the land outside the lake; and he was told that it was called the *shore* or *mainland.*

"If," said the father, "you were to sail your boat from one side of the pond to the other side, it would sail from one shore to another, and from one part of the mainland to another part."

Mr. Goodman then told his sons that the country in which they lived was an island, for the sea flowed all round it. "But," he said, "there are some lands across the sea which have no water round them; and these are not islands."

"If I had a boat big enough to carry me, I would sail to that island," said George.

"What for?" asked Fred.

"I don't know," replied his brother; "but I think I should like to live always on an island."

"Well, you do live on one," cried Fred; "does he not, father?"

"Yes," said Mr. Goodman; "but I dare say George knew that."

"Oh, of course," replied George; "but it is not like being on an island when you cannot see the sea anywhere."

"No," said his father; "I know what you mean. You think you would like to be on a little island and feel quite alone amid the sea. Well, when we get home I will tell you about a man who tried it and did not quite like it."

---

edge
know
piece
heard
shore
sail

---

re-ply'
main'-land
coun'-try

LEARN.

An island is land with water round it. A lake is water with land round it.

LESSON IV.

ALONE ON AN ISLAND.

After tea George asked his father to tell them about the man who lived alone on an island and did not like it.

"I know who it was," said Fred; "hi

name was Crusoe. But it is all a tale. There never was such a man."

"There is many a true word in good tales," said Mr. Goodman. "More men than one have lived upon an island alone, and this tale of Crusoe tells us very truly how such men feel."

"I have never read it," said George. "Do tell us about it."

So Mr. Goodman began:—

"Crusoe sailed in a ship that ran on a rock, and every man on board was drowned except himself. The waves cast him on the shore, and then he found he was on an island where no one lived."

"Not even wild men?" asked George.

"Not even wild men," his father said. "When the sea was calm he saw the ship still resting on a rock, and he thought the best thing to do was to get out of her all that he could. So he made a raft, and on this raft he brought out of the ship casks of biscuit, and barrels of powder, and guns, and swords, and all sorts of useful things. In the ship he found some money, but it was so useless to him that he very nearly threw it into the sea."

"Oh, how foolish!" cried Fred.

"Well, what could he buy with it?" asked George. "There were no shops in the island, I suppose."

"But he might have kept it," replied Fred.

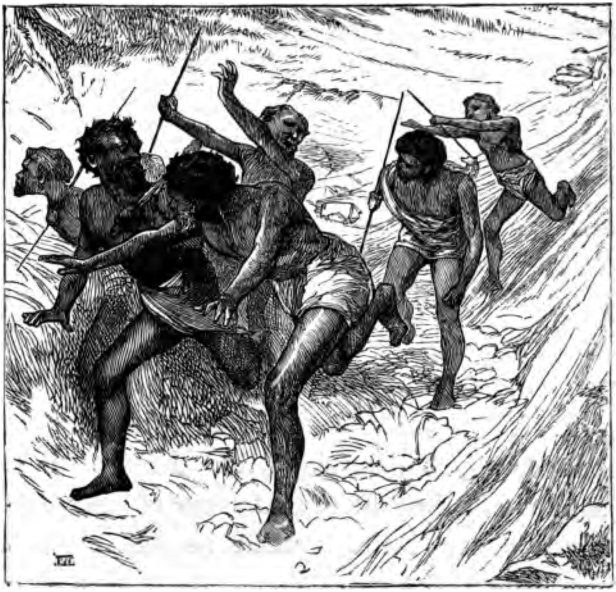
"Well, I believe he did keep it," went on Mr. Goodman. "But George is quite right; money is of no use in itself. We like it because we can almost always change it for other things that we want; and as Crusoe could not do this, a single box of matches, such as we can buy for a penny, would have been worth more to him than a hundred pounds in gold.

"Well, when he had got a good many things on shore the ship went to pieces and he saw no more of her. He had now to make himself a house. He found a little hill not far from the shore, and against the side of this hill he made a tent with sails and masts from the ship.

"Then he made a fence round the front of his tent. This fence was made of live wood stuck in the ground. The wood sprouted and grew so as to make a thick grove before the tent. Besides this, Crusoe dug a cave under the hill behind his tent, and made rooms in it to hold his stores."

tea
true
board
drowned
calm
buy

isl'-and
bar'-rel
man'-y
mon'-ey
bis'-cuit
sprout'-ed



LESSON V.

ALONE ON AN ISLAND—(2).

"WHAT sort of stores did Crusoe keep in his cave?" asked Fred. "I thought it was a desert island."

"Yes," said Mr. Goodman, "but 'desert' does not always mean the same thing as 'barren.' Crusoe found some grains of rice and barley, and sowed them in the ground. After a while he had quite a crop, and he needed a place to store it in. Then, besides, he had guns and powder and tools that were got out of the ship, and all these had to be kept dry. So the cave was very useful."

"Had he nothing to eat but biscuits and barley and rice?" asked Fred.

"Oh, yes," replied his father: "with his guns he shot birds that were good to eat. He found goats, too, running wild. He shot these at first, but then he caught some of them and tamed them. After a while he had quite a nice little flock."

"Why, they could give him milk," cried George.

"Yes, to be sure," said Mr. Goodman; "and he learned to make butter and cheese of the milk."

"But you said he did not like the island, father. Why not?" asked George.

"Well, it was very lonely," replied Mr.

Goodman. "You know the Bible says it is not good for man to be alone."

"I should not mind it for a little while," said George. "How long was he there?"

"He was there more than twenty-seven years," answered Mr. Goodman; "but for the last three years he had a servant to be with him. Not far off across the water there was a land where tribes of red men lived. Once they came in their canoes to Crusoe's island, bringing a young man, whom they were going to kill and eat."

"To eat!" cried George; "how horrid!"

"So it was," said his father. "But Crusoe saved him and got him free."

"How did he do it?" asked Fred.

"The young man ran away, and he was chased for a long way by his keepers. Crusoe knocked down one of them and also shot one. The poor man that was saved then became Crusoe's servant, and his name was called Friday."

"What a strange name!" cried both the boys.

"Well, it was on a Friday that Crusoe found him," said their father, "and that was the reason of the name. But you must read the story for yourselves. After reading it I do not think George will any more want to live on an island by himself."

cave
sowed
thought
birds
grains
caught

lit'-tle
can-oe'
hor'-rid

AN ISLAND MOUNTAIN.

LESSON VI.

THE SNAIL'S MARCH. [*Ranges of Hills and Mountains.*]

Farmer Brown had made five rows of mounds or hills in one of his fields. In these mounds he had put some turnips to keep them from the frost.

"You see," said Mr. Goodman, "that the mounds run in straight lines, and that there are deep hollows between them. Look at that poor snail, how it crawls at a slow pace up the side of the mound. It will be a long time before it gets over the top and down the other side into the hollow."

He then told his boys of some lands which he knew of far away across the sea. "In those lands," he said, "there are great hills which *mount* towards the sky, and are called 'mountains.' Some of them run in rows like these mounds do, and we call them *ranges* or *chains* instead of 'rows.' Although they reach for miles in height, men have to cross them to get from one country to another."

"That must be hard work," said Fred.

"Yes," the father said, "it is even harder for men to cross some ranges of hills than for that poor snail to cross this bank."

The boys were filled with wonder, and began to think they would like to go sometime to see those high mountains.

---

straight
crawls
height
thought
climb
high

---

tur'-nip
hol'-low

LEARN.

Mountains are high hills. They often stand in rows called "ranges" or "chains."

LESSON VII.

FROM FARM TO FARM. [*Countries and Continents.*]

"I TOLD you some time since," said Mr. Goodman one day, "that the land in which we live is an island. I told you, too, that some countries were not islands, for they were not in the midst of water. Now, let us think of our farm as a country, and that we are the only people who live in it."

The boys took to this fancy very well; it pleased them to think they had a country all to themselves.

"Now," said the father, "you know who holds the next farm."

"Mr. Brown," was the reply.

"Well," said Mr. Goodman, "we will pretend that his farm is a country which joins ours, and Mr. Brown and his men shall be the people of that country."

When they had crossed Mr. Brown's farm they went to the next one, which was held by Mr. Jones. They had to think of that as a third country, and of its owner and men as the people.

"Now," Mr. Goodman said, "we have been on three farms, and have not seen water round one of them. That is just what we might do in many large countries across the sea." He then showed that these countries could not be islands.

"When countries," he said, "join one another, as farms do, and have no water to divide them, the land over which they spread is known as a *continent.* Some day I shall tell you why that name is given; you will not forget the word, I dare say."

midst
coun'-tries
joins
peo'-ple
spread
for-get'

LEARN.

A continent is a large space of land, having many countries, without any sea between them.

LESSON VIII.

ROADS, HEDGES, DITCHES, BANKS. [*Boundaries.*]

THE farmer and his boys went round their farm the next day. They took note of those things which were on the edge of the farm, just as some time since they had taken note of the island and the pond.

"You see," said the father, "that Mr. Brown's farm does not touch ours, but that there is a road between the two. That road is known as a *boundary*, for it bounds or binds our farm. It bounds the farm on the north side."

"But," said George, "a road does not bound a farm on all sides."

"No," said Mr. Goodman; "there is a broad ditch on the south side, a hedge or fence on the east, and a high bank on the west. All these are called *boundaries*, for they bound the land which we own."

He then told the boys that it was in some such way that countries were bounded.

"In some lands," he said, "there is a high range of hills, very high indeed, which divide two countries, just as our high bank divides our farm from that of Mr. Jones. In some other lands a stream or river, like our ditch, but wider, bounds the country. But whether it is a range of hills, a stream, or a broad sea, that which marks the edge of the country is known as its *boundary*."

---

edge
stream
bound
ditch
range
brood

---

farm'-er
riv'-er
wheth-er

Learn.

A boundary is what marks the edge of a country. Many boundaries are formed by rivers or seas.

LESSON IX.

A STORM IN THE FIELDS. [*Rivers and Streams.*]

WHILE the father and the boys stood near to the bank which bounded one side of the farm, a storm arose, and they stood under a broad oak-tree to get shelter from the rain.

They saw the rain-drops run down the side of the bank, as if in haste to get away.

"Now," said Mr. Goodman, "you may learn a nice lesson from the rain. Do you see where the water goes as it leaves the bank?"

The boys saw that a gutter was formed along the bottom of the bank, and that the water ran in a small stream till it reached the ditch.

"And then," asked their father, "where does the water in the ditch flow to?"

His sons knew that it ran into the pond which was in another field.

"You now see," said Mr. Goodman, "that the water made of rain-drops runs *down*, *down*, *down*; it does not run *up* the bank; and then it runs *down* the channel to the ditch, and *down* along the ditch to the pond."

From this the boys knew that the gutter was lower than the bank, that the ditch was lower than the gutter, and that the pond was lower still.

And so it is with all streams; they always run *down*, and never *up*. And the place to which they flow, be it pond or lake or sea, must be lower than the streams themselves.

storm	**brood**	**does**
knew	**field**	**down**

gut'-ter **chan'-nel**

LEARN.

Water always tends to run downwards. Where water is always running downwards over the land it forms a stream, or river.

LESSON X.

THE GIFT OF THE CLOUDS. [*Rain.*]

"AND now," said the father, "we have een how the rain-drops fall and run together, so that they make streams, and we have seen where the streams go to. Have you thought where the rain comes from? and how it is caused?"

The boys knew that the rain came from above, but they had not thought how the raindrops were made; but George said that he thought the rain came out of the sky.

"Yes," said his father, "that is true. But what do you see float along over our heads?"

They saw great clouds move very fast, and asked their father if those clouds did not send down the rain. Mr. Goodman told them that the clouds were really water, but not in the same form as it was in the streams. He said that the clouds were made of *vapour*, which was water in fine drops like the steam which comes from a kettle on the fire.

"That fine vapour," he said, "floats in the air for a time. Then a change comes. The fine drops join together to make bigger ones. The air cannot hold these up; and so they fall on the ground."

"You mean the rain!" cried both the boys.

Then they saw the use of the clouds, which they did not know before.

rain
float
thought
cloud
true
fire

va'-pour
ket'-tle
big'-ger

LEARN.

Clouds are water in the form of vapour. Vapour is water in very small drops. When the small drops join to make bigger ones, they fall as rain.

LESSON XI.

GOD'S WATER-WORKS. [*How Clouds are made.*]

You will guess that the boys could not rest till they knew how the clouds were made, for George said he should think they would all waste away in time, and then there would be no rain.

"Ah," said the father, "God does not let his works waste away. He has a grand plan of making clouds, as well as streams and ponds and seas."

Mr. Goodman asked his sons what became of the water that they boil on the fire, and they said it was made into steam. And when he asked where the steam went to, they knew that it rose in the air.

"That," said their father "will help you to know what I mean when I tell you that the water in the sea and in the lakes is made warm by the sun, just as the water in the kettle is made warm by the fire. But the water which rises from the sea is called vapour. It is not steam, such as you see coming out of the kettle, but finer still. It is so fine that it floats up in the air and is not seen."

"And," one of the boys asked, "does it stay in the air and make clouds?"

"Yes," said the father; "it stays there so long as the air is warm enough for it. But in cold air it changes. When it becomes cool it breaks into rain-drops, which fall to the ground to make streams, and to feed the plants and make the grass grow. So you see now what I meant by God's plan of making clouds and streams and seas. The water always keeps moving round. From the sea it is lifted by the sun into the air. In the air it makes clouds. Chill winds turn the clouds to rain-drops. The rain-drops fall on the ground. There they make streams, and the streams run again into the sea."

---

guess
air
waste
chill
boil
sea

---

e-nough'
a-gain'
lift-ed'

Learn.

Water rises from the sea as vapour. The vapour forms clouds. The clouds fall in rain. The rain makes streams and rivers. The rivers run into the sea.

LESSON XII.

THE CLOUDS AND THE WIND. [*Drifting of Clouds.*]
ICE, SNOW, HAIL. [*How they are formed.*]

GEORGE asked if the clouds could move where they chose. He seemed to think that they might be alive. Mr. Goodman saw that

Lesson Page
XX. Walking in the Mud 59
XXI. The Garden Paths 62
XXII. The Four Seasons 64
XXIII. North, South, East, and West.—Part I. 67
XXIV. „ „ „ Part II. . 70
XXV. „ „ „ Part III. . 72
XXVI. „ „ „ Part IV. . 75

PART II.

XXVII. The Size and Shape of a Field 78
XXVIII. Complete Plan of a Field 81
XXIX. Picture of the Schoolroom Wall 83
XXX. Plan of the Schoolroom Floor 87
XXXI. Plan of the Flower Garden 91
XXXII. Plan of the Village School and Playground 95
XXXIII. Plan of the Village 99
XXXIV. Map of the Village and other Places around 103
XXXV. General Maps 107

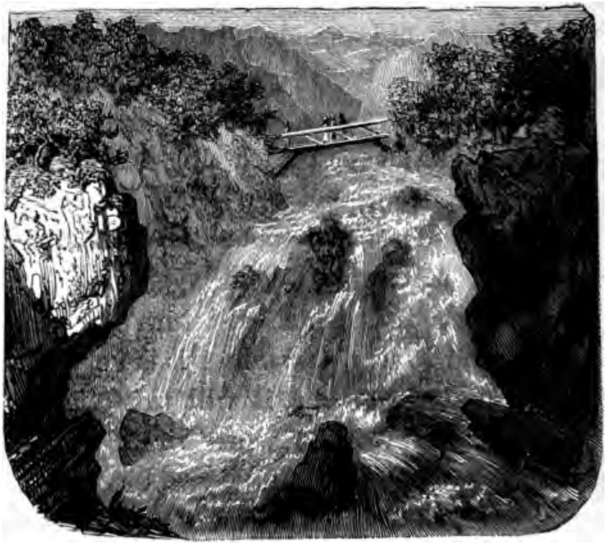
ll have

days to
e some
e pond.
now,"
cold,
water
y, very
e thin
-drops
hail."
I never
e made

he

wer

oces the
now.



LESSON XIII.

THE SWOLLEN STREAM.

As the two boys and their father walked home after the shower, they crossed a little stream by a bridge of planks. They found it very much swollen by the rain.

"Look, father!" cried George, "the stream is just like a great big river. See how it dashes over the stones!"

"I should not like to be in it just now," added Fred.

"No," said Mr. Goodman; "it would roll you over and over, just like a pebble stone."

"Is that the reason why pebbles are so round," asked George, "because they are rolled over and over in the water?"

"Just so," answered Mr. Goodman. "Still, it is not only because they are rolled about, but because they are rubbed against each other, that they get to be so round. By the way, what was it that your uncle said when he wanted me to send you boys to a large school?"

"Oh, he said we should have the nonsense knocked out of us," replied Fred.

"Yes, and he said we should have the corners rubbed off us," added George. "Did he mean we should be like pebbles rubbing against each other in the water?"

"That is just what he meant," replied Mr. Goodman.

"But what would be the good of it?" asked Fred. Mr. Goodman picked up two stones off the path. One was rough with sharp points ; the other was smooth and round. "Which shape do you like the best?" he asked.

"The round pebble," said Fred, "it is such a good stone to throw."

"Yes, I suppose so," said Mr. Goodman, "it fits well to your hand and you can get a fair hold of it. Now there are boys like each of these stones."

"In what way, father ?" asked George.

"Well, some boys are self-willed, and peevish, and awkward to handle, like this rough stone. But when they get into a big school they find they cannot have their own way. They get to think less of themselves, and they learn to work smoothly with others. Their sharp edges are rubbed off, and then they are like this smooth round pebble."

---

two
school
bridge
meant
said
smooth

walk'-ed
unc'-le
peb'-bles

LEARN.

Pebbles are rounded by being rolled in water and rubbed against each other.

LESSON XIV.

PEBBLES.

GEORGE thought a great deal about the pebbles in the river. One day he was passing a hole dug by the side of the road, and he saw that there were layers of sand and pebbles to a depth of twenty feet. When he went home he told his father what he had seen; and Mr. Goodman said it would be the same if a hole were dug anywhere from Beach Hill to Upton. Between these two spots there was a broad valley.

"But what a lot of them there are!" cried George. "How did they all get there?"

"Get there!" said Fred. "Why, of course, they have always been there."

"Always is a long time, Fred," remarked his father. "No, there was a time when not a single one of those pebbles was here."

"But how could they come?" asked Fred. "Why, it would take more horses and carts than there are in all the world to bring them."

"That is true," replied his father; "but they were brought without the help of a single cart; in fact, before there were any carts at all in the world."

"I know now," said George. "It was our river that brought them."

"That little skimpy thing!" cried Fred, "why, it couldn't grind a bucket of pebbles in twenty years."

"I think it did a pretty piece of work in grinding after that storm of rain the other day," said Mr. Goodman. "Besides, I fancy it used to be bigger a long time ago."

"But how could it scatter the pebbles all the way between Beech Hill and Upton?" asked Fred.

"Well, you see, the stream changes its bed from time to time. Five hundred years ago it flowed nearer Upton than it does now. In thousands of years it has often changed its course through the valley, and so it has been spreading pebbles all over the land."

"What a deal of work a river must do," remarked George.

"Yes," said Mr. Goodman, "all things in this world are full of labour. And the rivers have not only to grind pebbles, but they have to carry down the mountains into the valleys, and the valleys into the sea."

Both boys at once cried, "Oh!" as though they thought their father could not mean what he said. "But it is really true," he said. "Wait till after the next storm of rain, and I will show you."

depth
grind
true
course
piece
wait

lay'-er
pret'ty
val'-ley
skimp'-y
riv'-er
big'-ger

LEARN.

The mass of sand and pebbles in a broad valley often looks too large to have been brought by the little stream running through it. But besides the effect of winter floods and storms we have to remember that the stream has often changed its bed and so worked all over the valley.

LESSON XV.

THE WORK OF RIVERS—(1).

In a few days after the talk about pebbles there was a rain-storm again. When it was over Mr. Goodman told George and Fred to go down to the stream and to bring back a glass full of water. They found the stream very much swollen. Although the sun was shining again, the water did not look bright or clean; its colour was a dull red brown.

As George stooped to dip his glass the bank gave way beneath him. He would have fallen in, but Fred caught hold of him, and both boys fell back upon the wet grass. The glass rolled away, but as the ground was very soft it was not broken, and it was caught in some long weeds just at the edge of the stream.

As the boys got up they saw that a good piece of the bank had fallen away and left a cloud of mud in the water.

"Don't dip the glass there again," said Fred, "it is so muddy now; let us go higher up."

So they went up the stream, but still the water looked dull and dirty.

"Never mind," said George; "father does not want to drink it, and we shall get it no clearer than this to-day."

He then dipped his glass, and this time brought it up full.

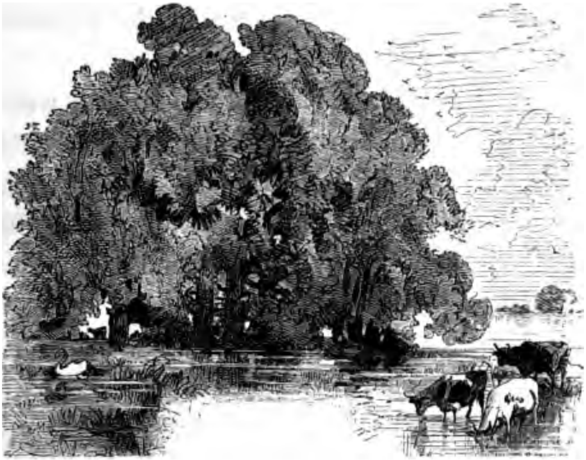
They could not run now, for they did not wish to spill the water. So they had to walk slowly, and as they went along they tried to think what their father could want with a glass of muddy water.

When they got home Mr. Goodman did not tell them, but he took the glass and set it on the ground where it would not be shaken.

"Leave it," he said, "till to-night."

talk **brought** **bright** **spill**

peb' bles **al-though',** **shak'-en**



LESSON XVI.

THE WORK OF RIVERS—(2).

After tea the father and his boys went to look at the glass of water; but Mr. Goodman would not let them touch it lest they should shake it. So they knelt down, and they saw that there was a thin cake of sand and mud at the bottom of the glass, and the water at the top was almost clear.

"Now, where did that sand and mud come from?" asked their father.

"It came from the banks of the stream," said George.

"Yes," replied Mr. Goodman: "the water gathered it up as it rushed along after the rainstorm. Now, suppose, instead of one glass, we had taken ten thousand glasses of water, and let them stand; how much sand should we have had?"

"We should have had a barrow-load," replied Fred.

"No doubt," said his father; "and if you think of that you will see that the stream is carrying away a good many barrow-loads today."

"And where does it carry them to?" asked George.

"To the sea, of course," cried Fred.

"Not all at once," said their father, "but little by little it does so."

"Why, we saw it take nearly a barrow-load at once," said George, "when the edge of the bank fell in, and I almost fell with it."

"I dare say," replied Mr. Goodman; "but you must not think that it is only in storms that the river works in this way. Every day and always it is carrying the land down to the sea, only you see it better after such a storm."

"Then there will soon be no more land left?" said George.

"It will last our time," replied Mr. Goodman. "Besides, it does not quite swallow up the land; it only changes its place a little, as you will learn when you are older."

---

clear **edge**

---

swol'-len
col'-our
dirt'-y
mud'-dy
thou'-sand
bar'-row

LEARN.

"*The waters wear the stones,*" *and rivers are always wearing down the land and carrying it down to the sea.*

LESSON XVII.

THE FAR-AWAY LAND.

George did not like to wait till he was older to learn what he very much wanted to know. He thought so much about the work of the rivers that he dreamed of it in his sleep.

One night he dreamed that the banks were tumbling in all along the stream, and that the water grew wider and wider till the edge was just under his window. Then he heard a voice calling him and saying, "Come! come to the new land in the sea."

So he put his head out of the window, and the water was nearly up to the sill. And he saw a fairy sitting in the bow of a little boat. She had a light like a star on her forehead, and as she oked out over the water a bright gleam from e star shot across the dark flood. In a oment George was in the boat, and the fairy pread out shining wings and wafted the boat long. As they floated on, the banks, and elds, and houses, and churches all fell into the ater ; but for all that the water was quite till ; and all around it was quite dark, except here the light fell from the star in the fairy's orehead, and that always pointed onward.

At last the light spread out along the far-off dge of the flood. It grew brighter and righter. Then George saw that there were weet green fields and broad lands clothed with pringing corn. There also he could see vil- ages and towns. They looked so sunny and right that George thought it must be summer here. Yet that could hardly be, because the orn was not grown.

"Is it warm enough to do without fires ere in the spring?" thought George. "I ee no smoke from the chimneys."

"There never is any smoke here," said the airy.

George had not spoken a word, but she seemed to answer his thoughts.

He saw a great house by the shore, and out of the gate a troop of merry children ran down to play.

"That is far too grand for a school," he thought. "It must be the castle of a lord with many children."

"There are no castles here," said the fairy.

He saw a band of men going out, and each carried something on his shoulder. All at once they stopped in a long row, and every one struck his weapon into the ground at the same time.

"They are soldiers," thought George.

"There are no soldiers here," said the fairy.

He saw a long high building of brick, and many men about the door.

"It is not dirty enough for a mill," he thought. "It must be a workhouse."

"There is no workhouse here," said the fairy.

Then a great bell began to ring, and the men went towards the door. But it rang so loud that George awoke, and found it was his father ringing a bell for every one to get up.

sea **head** **light**

fai′-ry **waft′-ed** **ex′-cept**

LESSON XVIII.

CHANGES OF THE LAND.

George told his dream to his father. Mr. Goodman said he hoped the time might come when there would be no smoke in the towns, and when no people would be so poor as to go to a workhouse; but he thought it would be a long while before that came.

"But," said George, "if all the rivers carry the land down into the sea they must make a new land in the sea."

"Yes," replied the father, "but not so far away as the land you dreamed about. What the rivers do is to spread out banks near the shore. Some of these the sea carries away, but others keep on growing till they add new land to the shore."

"Then," said Fred, "in time the sea and the land must change places. Was there ever a time when the land was where the water is now, and the water was where the land is?"

"No," replied Mr. Goodman, "I think not. For a longer time than we can tell, the great seas have been where they are now; but the little seas that run up into the land have been dry in past ages, and all about where we live now was the bottom of a shallow sea. You know our country is an island. There was a time when it was not one island, but many, because only the mountain-tops stood above the water. But there was also a time when it was not an island at all. You know that our country is cut off from other lands by a narrow sea. Once that narrow sea was all dry land."

"It is very strange," said George, "that the land should be going up and down like the waves of the sea."

But Fred broke in, almost angry—

"Come, now, that won't do! The waves of the sea go up and down in a second, and the land takes thousands of years."

"Yes, Fred, the changes of the sea are quicker, as you say," remarked his father; "but George is right, too. Look at Beech Hill there. Is it not like a great big wave? See, the white stems of the beeches at the top are like a line of foam at the crest. That hill has risen out of the earth like a wave out of the sea, and the valley has been dug out by water, and frost, and all the force of the weather; but even now the hill is sinking, as a wave sinks. The rains wash its dust down here, and the stream carries it away. If the world lasts long enough, the time will surely come when Beech Hill will have sunk down as low as we are now."

"I wonder what sort of world it will be then," cried George.

"So do I," said Mr. Goodman.

dream
spread
smoke
shore
while
once.

car'-ries
nar'-row
lit'-tle
ang'-ry
shal'-low
e-nough'

LEARN.

The land is always slowly falling or rising. The earth brought down by the rivers is not carried far out to sea, but is dropped near the coast. Thus, though land and water have often shifted their places, the great seas have always been where they are now.

LESSON XIX.

AN HOUR IN THE WOOD. [*Forests and Animals—Fur Trade.*]

It was not long before the winter came, and the snow fell early in the year. The trees looked so pretty in their white dress that George and Fred asked their father to go with them through a wood not far from their house.

When they reached the wood they saw hares and rabbits run about, and birds hopping about the tree-tops. And while the boys made snowballs, they saw a fine fox run past with a duck in his mouth, which he had caught on the farm not far away. Then the boys were in fear that some wild beasts might come.

"You need not fear wild beasts here," said the father; "our woods are not large enough for them to shelter in. Many, many years ago, there were wild boars in this country, but they have been killed long ago. There are some countries where the trees are larger than in this, and where they cover hundreds of miles of grounds. They are not called woods, for they are large enough to be known as *forests.* In some of these forests, men live year by year, and trap and kill all sorts of wild beasts."

"Do you mean lions and tigers?" asked Fred.

"Yes," said Mr. Goodman, "there are lions and tigers, monkeys and bears, besides large birds with fine plumes of all colours. Men kill many kinds of animals and sell their skins to us to make clothes."

The boys thought they would like to be hunters when they had grown to be men; but they did not know what hard lives the hunters led in the strange lands of which their father spoke.

---

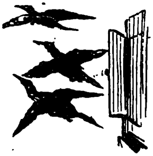
year
boar
white
plumes
hare
clothes

---

pret'-ty
rab'bits
hun'-dreds

LEARN.

A forest is a very large wood. Forests are the homes of many wild beasts and birds. As men grow in numbers the forests are cleared, and the beasts killed or driven away.



BAD ROADS.

LESSON XX.

WALKING IN THE MUD. [*Roads.*]

One day, George and Fred went out alone, their father being unwell. There had been a smart storm while the boys were in the fields, and their legs were splashed with mud, and their boots were wet and dirty. They were blamed for walking in the mud, and were told that they ought to have come home by the road, although they would have had to go farther round to get home.

"Many years ago," said Mr. Goodman, "the people would have been glad to have had roads to walk on. Then, when men went to sell their corn, they had to drive their carts through fields of mud and sand, so that the wheels sank very deep. In those times, men could not get from place to place with ease as they can now to sell their beasts and corn, their fruit and hay."

"But there must have been good roads in the large towns," said George.

"No, my boy," his father said; "even in towns, the streets were deep ruts of sand and mud; for there were only a few good roads from one end of the country to the other. Now we have many good roads and also railways to make our lives pleasant. When you are older, I shall tell you how and why our chief roads were made. What are called 'the good old times,' would not be called good times in these days."

"But how could people do without roads?" asked Fred.

"They did not go about so much as we

do," answered his father. "They seemed not to want so many things as we think we do. They did not drink tea. They burned wood found near their own homes, instead of coal. They used to spin and weave in their own houses. In fact they made for themselves almost all the things they wanted, and they stayed at home. Thus there was not nearly so much trade as in our days. And people did not feel so much the want of roads."

ought
chief
walk
fruit
wheels
stayed

far'-ther
rail'-way
pleas'-ant

LEARN.

Roads are needed for trade and travel. Where there are only bad roads there is little trade. In our time we have more and better roads than were ever known before.

LESSON XXI.

THE GARDEN PATHS. [*Minerals.*]

Mr. Goodman was fond of his garden. One day he wished to have his paths made neat with bright sand. He and the boys dug some sand and stones out of a deep pit not far away, and brought them to the garden.

"These might form a nice lesson some day when we are at home," said the father. "I want you to notice how there are things in the ground that we do not see on the top of it, and how we can use them in many ways. The stones must be laid down first on the path to make it hard, and then we shall put sand on the top to make the paths neat."

He then said, "There are other things besides stones and sand that lie deep in the ground which we can put to use in many ways.

"It is in the ground that we find the clay, of which we make bricks to build houses and barns. And in other parts of the ground, we find limestone and chalk of which lime is made. Of lime mixed with sand we make mortar. And it is out of the ground, too, that we get tin, and copper, and lead; and also gold and silver.

"We dig our coal and iron out of deep pits or mines in the earth. With the coal we make bright fires to warm our hearths. Without coal and iron we should have no railways, nor steam-boats, nor steam-ploughs, nor indeed daily papers. All our trade now depends on coal and iron.

"Some day, when we have to stay at home in bad weather, I will tell you more about the things that are dug from the earth, which help to make us rich and happy."

paths	**chalk**	**laid**
build	**hearths**	**earth**
i'-ron	**cop-per**	**hap-py**

LEARN.

Out of the ground we get clay to make bricks, and limestone to make lime and mortar. We also get tin, copper, lead, gold and silver, coal and iron. All our trade depends on coal and iron.

LESSON XXII.

THE FOUR SEASONS. [*Spring, Summer, Autumn, Winter.*]

"I HAVE told you," Mr. Goodman said, "about the cold and the warm winds, the dry and the moist winds. You know that the air is cold in the winter, and that it is warm in the summer. You know, also, that it is *cool*—that it is neither very cold nor very warm—in the spring and the autumn.

"When the air is very cold the plants do not grow as they do in the summer. When the plants and the trees have had a long sleep through the cold winter, they wake up in the spring as the sun becomes warmer. Then the buds come out on the plants and trees.

"A plant or a tree in the spring time is like a little child. When the summer comes, the buds turn to flowers and fruit. Then the plant or the tree is like a man in the prime of life.

"When the autumn comes the leaves of many trees fall to the ground, the summer flowers die off, and the fruit is pulled from the trees. Then the plant or tree is like an old man. And when the cold winter comes again the plants and trees, for want of the bright sun, go to sleep again.

"We have warm days in the summer, because then the sun comes higher up the sky than at other times; and when the sun is higher he gives us more heat. We have cold days in the winter, for then the sun is low by day, and the night is long. We have cool days in spring and autumn, for then the sun is not so high as in summer, nor so low as in winter."

---

moist
sum'-mer
leaves
win'-ter
heat
au-tumn

LEARN.

There are four seasons:—spring, summer, autumn, and winter. In winter the sun is low in the sky. The nights are long, the days are cold. In summer the sun is high in the sky. The nights are short, the days are warm.

LESSON XXIII.

NORTH, SOUTH, EAST, AND WEST—(1).

[*Cardinal Points.*]

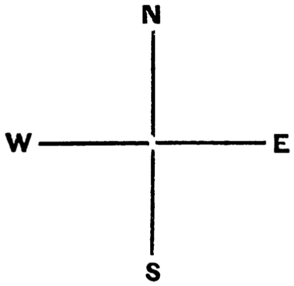
Mr. Goodman and his sons went out for a walk. "Now," said the father, "let us sit down on the grass, for the ground is dry and the sun is warm."

They sat down with their backs to the sun just as the clock at the front of the church struck twelve, which was noon.

"Now," said Mr. Goodman, "I know that

our backs are to the south, for the sun is in the south at noon." Fred asked what was meant by the term *south.*

His father told him that there were four *points* like those made by a cross +, and that these points were named *North*, *South*, *East*, and *West.* Then he made a cross on a sheet of paper, and marked it so that the boys could see what he meant.



He then told the boys to look at the vane on the top of the church. "You see there that the vane is of the shape of a cock; and that vane which is like a bird points its beak to the sun just now. I know from that fact that the wind blows from the south, for the bird's beak at all times points to the wind; that is, the wind blows in his face, and turns his tail the other way."

"But," said Fred, "if the wind should blow the other way, how can you tell that it has changed?"

"Then," said the father, "the vane would turn to the north to face the wind, and I could tell from the way he points his beak that the wind came from the north." Mr. Goodman then showed his boys a *compass*, and told them how the needle on its face always pointed to the north. He showed them also where north, south, east, and west were marked on the face; and told them that these were called *points of the compass*.

---

walk
meant
front
church
twelve
vane

---

pa'-per
chang-ed

LEARN.

There are four chief points of the compass: north, south, east, and west. The needle of the compass always points to the north. If we turn our backs to the sun at noon we are looking towards the north.

LESSON XXIV.

NORTH, SOUTH, EAST, AND WEST—(2).

[*Four Half-Points.*]

"DOES the wind blow at all times from North, South, East, or West?" asked Fred.

"No, my boy," was his father's reply. "It may blow from a place between two of those points."

"Then," asked George, "if it should blow half-way between North and East, what would you call it?"

"When it is between North and East," said his parent, "it takes the name of both those points, and we say it is *North-East.*"

"I should think, then," one of the boys said, "that if it blew half-way between South and East, you would call it *South-East.*"

"Just so," was the answer. "And, in the same way, if it should be between North and West, we should say it was *North-West*; and when the wind blows between South and West, we call it a South-West wind."

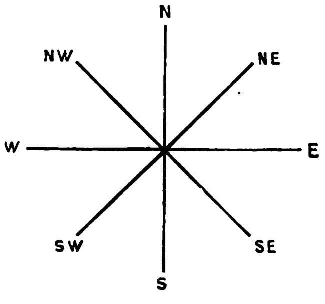
Then Mr. Goodman made a star with *eight* points on a sheet of paper to show what he meant.

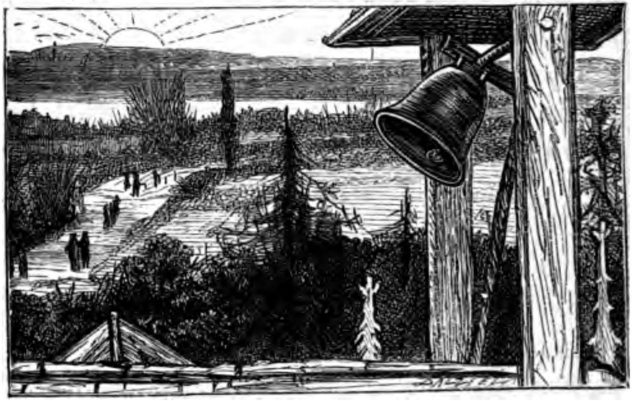
blew **eight** **sheet**

re′-ply **an′-swer** **be-tween′**

LEARN.

Between the chief points of the compass there are four half-points; north-east, south-east, north-west, and south-west.





LESSON XXV.

NORTH, SOUTH, EAST, AND WEST—(3).

[*How the Points are found.*]

"WHAT does it matter which way the wind blows?" asked George.

"A great deal," said his father, in reply. "When the wind blows from the North, I know that we shall have cold weather; and if from the South, we may have warm weather."

"When I looked out of the window of my

bedroom, as the sun rose, this morning," George said, "the wind blew in my face."

"Then," said his father, "the wind came from the East, for the sun *starts* from the East. And if the wind should blow in your face when you see the sun *set*, it will be from the West; for the sun sets in the West."

"You mean, then," Fred said, "that the course of the wind is named by the point from which it comes, and not by the one to which it goes?"

"That is so," Mr. Goodman said. "We first find the points at mid-day, for then the sun is in the South. If you turn your back to the sun at noon, you know that the South is at your back, and the North is to your face. Then the East, where the sun rises, is on your right; and the West, where the sun sets, is on your left.

"Then, while you stand there, if the wind blows at the back of your neck, you will know that it comes from the South. If it blows in your face, you may be sure that it comes from the North. If it should blow on to your right side, it would be from the East; and if you feel it on your left side, it blows from the West."

know
mat'-ter
warm
ris'es
neck
win'-dow

LEARN.

Each wind is named by the point of the compass FROM *which it comes. If it blows from the rising sun it is an east wind, or from the setting sun a west wind. If it blows from the sun at noon it is a south wind; or towards the sun at noon, it is a north wind.*

IN THE HOME OF THE NORTH WIND.

LESSON XXVI.

NORTH, SOUTH, EAST, AND WEST—(4).

[*Effects of the Wind.*]

"You told us, the other day, that the North wind was cold, and the South wind warm," said George, as he and Fred went out with their father to take a walk.

"Yes," said Mr. Goodman, "and I will tell you why. Far off, in the North, there is a great deal of snow and ice; and the air that comes from that part is made cold before it starts to us. To the South, there is a land which is made warm by the sun; and the air is made warm there before it comes to us.

"On the East side of our isle, across a small sea, the land is very wide, and the wind that comes from there is dry and cold, for there is not much water to send vapour into the air. The West wind is more moist, though not much so. But, on the South-West of our land there is a great sea which sends a vapour into the air, for thousands of miles, when the sun warms it. And the wind from over that sea brings the vapour in the form of clouds, which break into drops of rain. Most of our rain comes from that point."

"Then," said Fred, "when the bird on the church points his beak to the South-West, we may be sure there will be rain. Is that so?"

"Not at all times," was his father's reply. "But we shall know then that the air is more moist, and that the wind is more likely to bring rain with it than from the other points."

George knew that the great storm, a few

days before, rose on that side of the country, for the wind blew the rain in his face when he looked that way. And, if he had cast his eyes on the vane at the top of the church, he would have seen the bird's beak point to the South-West.

SOUTH-WEST WIND.

snow
va′-pour
ice
coun′try
moist
o′ther

LEARN.

The north wind is cold and snowy; the east wind is cold and dry; the south wind is warm and dry; the west wind is more moist than the east. But it is the south-west wind that brings most rain.

PART II.

LESSON XXVII.

THE SIZE AND SHAPE OF A FIELD.

One day, Mr. Goodman and his boys went across a field not far from home, where they saw a man and a youth stretching a chain along the ground. Mr. Goodman knew that they were taking the measure of the field to find out how large it was.

The boys thought it would be very nice to know how large their *own* field was—the one in which the pond lay. The next day they all went to their field, and took with them a long piece of string to measure with.

"Now," said the father, "this piece of string is just 10 yards long."

George took one end of the string, and Fred the other; and they stretched it from the hedge along the grass.

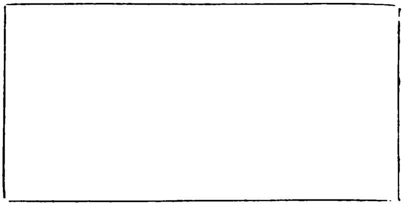
"There," said Mr. Goodman, "you have measured 10 yards. Now, begin again where you left off, and measure 10 yards more." And this they did 10 times, so that there were 10 lengths of 10 yards each.

"How many are 10 times 10?" asked their father.

"One hundred," said George. And then they knew that the field was 100 yards long.

But when they drew the string across the field the other way, it took only 5 lengths of the cord to reach from one side to the other. From this, they knew that the field was only half as wide as it was long; that is, it was only 50 yards wide.

Mr. Goodman, when they reached ho drew on a piece of paper the shape of the fi and the boys saw that the plan on the pa was just twice as long as it was wide. H is the plan:—



chain
string
stretch'-ing

field
grass
meas'-ure

hedge
twice
on'-ly

LEARN.

A plan of a piece of ground shows its shape

LESSON XXVIII.

COMPLETE PLAN OF A FIELD.

When the father and his boys were at home at night, Mr. Goodman took up the plan he had drawn, and said, "This plan shows only the *outline*; that is, the *bounds*, the *edges* of the field."

He then told the boys that, to make a proper plan, they must mark the pond and the three tall poplar trees, and the small winding stream. Then he asked where the pond was; to which George replied, "At one end of the field."

"Right," said his father; "but which end is it at?"

"At the east end," said Fred.

"Then," said the father, "we must mark a place for it at the east end of the plan. Tell me; is it in a corner of the field?"

The boys knew that it was about half way between two corners. The father then marked it so on the plan; that is, at the right-hand end, and about half way between the two corners of that end.

"Now," asked Mr. Goodman, "where are the three trees?"

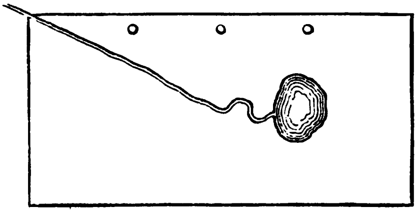
George said, "The middle one is on the north side, about half way from end to end."

So they marked a place for each of the three trees on the north side, the middle one being half way from end to end.

"Where does the little stream run?" asked the parent.

One of the boys answered, "From the north-west corner to the *middle* of the field, and then it winds about till it reaches the pond."

You will see on this plan how that stream was drawn.



LESSON XXIX.

PICTURE OF THE SCHOOLROOM WALL.

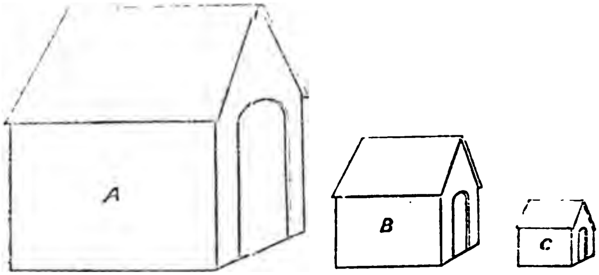
THE weather was very wet, the next day; and Mr. Goodman and his sons went into a schoolroom near the house, where they spent an hour or more.

"I think," said the father, "we might now make a picture of the wall of the schoolroom, in the same way as we have made a plan of the field."

The boys were pleased with this, for they had begun to like the work of taking measures. Besides, George had bought an inch tape measure, and wished, like all boys, to put his new toy into use.

Mr. Goodman said, "I will draw three small pictures of the dog's kennel. They are not all of the same size, but each one is a likeness of the same kennel. None of them is so large as the real kennel; but each of them makes one part of the kennel suit the other parts just as it does in the real one.

This was to show the boys how the same thing may be drawn in large pictures or small ones, while all the pictures are right.



"Now," the father said, "let us draw a picture of the wall of this room."

George took out the piece of tape with marks on it, and he and Fred stretched it across the wall from one corner of the room to the other; and George said that the wall was just 22 *feet* long.

"Good," said their father. "Now, Fred,

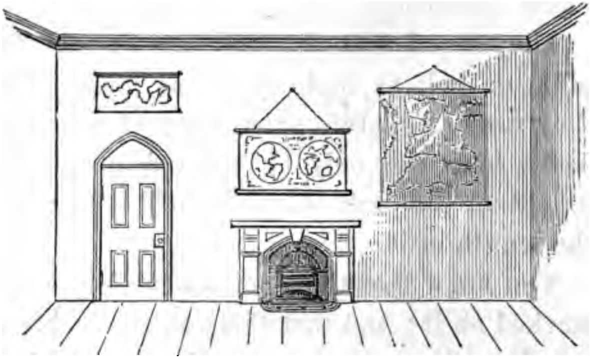
mount those steps and hold one end of the tape at the top of the wall, and let it hang down so that George can see where it will touch the floor."

They found that the wall was just 11 feet high, or half as high as it was long. Then they made a picture on a sheet of paper, 22 *inches* long, and only 11 *inches* deep; for the height of the wall was only half as much as the length of it.

You know that the tape measure has inches marked on it; and that there are 12 inches to a foot. It was easy for the boys to make a picture of this size, for each inch on the paper meant one foot on the wall.

" Then," said Mr. Goodman, " you will find that the fireplace in the middle of the wall is just 3 feet high and 3 feet wide. How many inches will that take on the picture ? "

George said that 3 inches on the picture would mean 3 feet in the fireplace; and so they drew a fireplace of that size, as you will see on the picture over the leaf. And they drew a door 7 *inches* high, to seem like the real door, which was 7 *feet* high; and they marked 3 maps on the wall, each of the proper size. Here is the picture of the wall of the schoolroom:—



---

spent

hour

suit

---

weath'-er
pic'-ture

meas'-ure
wish'-es

ken'-nel
re'-al

Learn.

The same thing may be shown rightly in a large picture or in a small one, if the measure of each part is kept right.

To keep our picture right, we should have a little measure for it, instead of the real measure of the object drawn. Thus in the little measure an inch may stand for a foot in the real one.

LESSON XXX.

PLAN OF THE SCHOOLROOM FLOOR.

"Now," said Mr. Goodman, as he and his boys stood in the schoolroom, "you know that the wall stands upright. If we set the picture upright, too, it will show us what the wall is like. But if I draw a picture of the *floor*, to show where the table and the chairs stand, would it be proper to set that picture upright?"

George thought it would be best to lay it down flat, like the floor. The father then told his sons that this would not be a picture, but a *plan*, for the drawing would show only the size and shape of the floor, and the *places* where table and stools would stand. You see from this that a *picture* and a *plan* are not the same thing.

The boys then stretched the tape along the floor, and found it to be 22 feet long and 14 feet wide. The father asked how long the boys would make the plan of the floor, to which they replied, " Of the same length as the one for the wall."

"That need not be," said Mr. Goodman, " for as we cannot make it so large as the floor really is, it does not matter what size the plan is. If we pretend that half-an-inch, instead of an inch, is a foot, then how long will it be ? "

" Just half the length of the other one," said George.

" Very good," said the father. " Now, of what size shall we make the plan of the floor ? "

The boys knew that it must be 11 inches long, which would be the same as 22 half-inches. And the width, they said, should be 7 inches, or 14 half-inches. Then they drew lines of these lengths, and thus made the shape of the floor.

" We will take the steps out of the room," the father said, " so that we may have only the table and the six desks."

Then Mr. Goodman asked how they were to

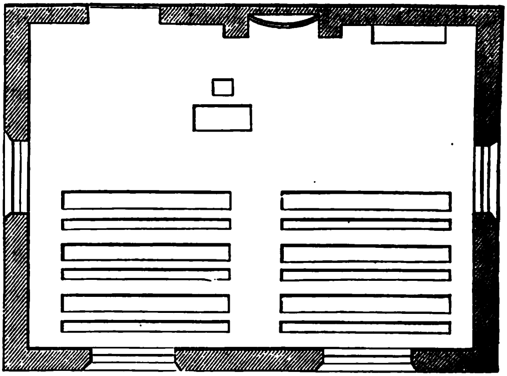
look down on to the floor, and the table, and the forms and desks, without seeing the legs of the table and the forms ; for they must look down to face the floor, just as they had stood upright to face the wall.

George thought they ought to be on the ceiling ; but of course they could not lie there.

At last the father said they must *fancy* they were on the ceiling, just as if they were flies up there.

The boys knew that a fly could look down and see the floor, and the top of the table, and the tops of the forms, all at once. Then, as the shape of the floor had been drawn, they had to measure the top of the table, and the distance from it to the walls, and also from the walls to the forms and desks. And for every foot of measure, they counted just half-an-inch on the paper. And so they had a plan about half as long as the one they had made of the wall, although it meant to show the same length.

Over the leaf is the sort of plan they made ; though this one is smaller than theirs.



wall
width
length

up'-right
ceil'-ing
ver'-y
fan'-cy
ta'-ble
dis'-tance

LEARN.

A picture shows how things look. A plan shows only the places of things. The little measure that we use for our plan may be any size we like. Half-an-inch may stand for a foot just as well as an inch.

* * *

LESSON XXXI.

PLAN OF THE FLOWER GARDEN.

"Now," said Mr. Goodman, "we have drawn a *plan* or *map* of the schoolroom. Do you think you could draw a plan of the flower-garden?"

"I think so," replied George.

"How will you do it?" asked the father, "for the garden is much larger than the room, and yet we cannot have a sheet of paper larger than the one we have used."

George thought that, as they would use the same size of paper, they might make half-an-inch stand for more than a foot.

"Or," said his father, "we might make a quarter of an inch to mean more than a foot."

They found the garden to be much longer than the schoolroom; it was just 90 feet long.

"Do you know what a yard is?" asked the father. The elder son replied that it was just 3 feet. What was to be done then? The boys knew at once that 90 feet meant 30 yards.

The father told them to count an inch on the paper as ten yards in the garden, and then asked how long the picture or plan would be.

"Three inches," replied Fred; for each inch meant 10 yards or 30 feet.

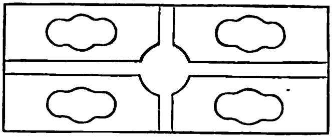
Then they measured the *width* of the garden, which was only half as many yards as the ength; and for every ten yards, they took n inch on the paper. And, just as they had lone with the door and the fireplace, when hey made a picture of the wall, so they did vith the beds and paths of the garden.

Although the garden was many times longer han the room, the plan of the garden was not o large as that of the room. Can you tell vhy? No doubt you can. You will say that hey took only one inch to mean 10 *yards* of arden on this plan, while they made 22 half nches to mean 22 *feet* of wall on the former ne.

"Now, my boys," said Mr. Goodman, "you now that it does not matter how much ground ou pretend to put in one inch. You may nake an inch to mean a yard, or a hundred ards, or a mile, or just what you choose. nly it must be the same all over the plan or nap.

"You must not make an inch to stand for yard in the length, and for half-a-mile in he width of the plan. That would throw it all rong. The one rule is, whatever length you take for your foot or your yard in one part you must stick to the same length in every other part of the same plan.

"And now you can see what is meant by the *scale* on which a map is drawn. If we pretend that an inch is a mile, that is called a *scale of one inch to a mile.* Or if we say that half-an-inch shall be a mile, then it is on the scale of half-an-inch to a mile. Of course the one is on a *larger scale* than the other."



sheet	**inch**	**paths**
size	**rule**	**choose**
gar′-den	**quar′-ter**	**pre′-tend**

LEARN.

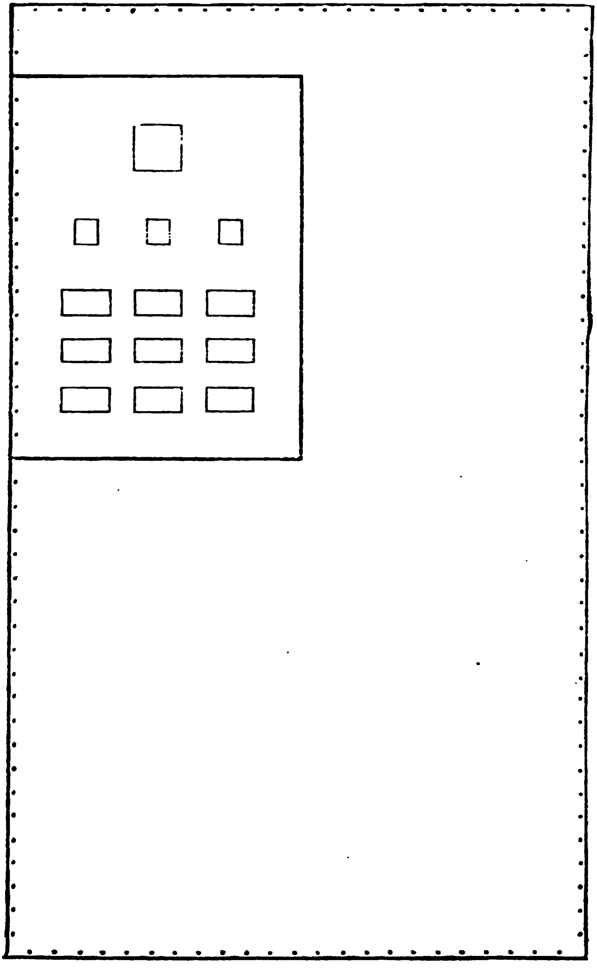
The little measure used for a plan is called a SCALE. The same scale must be used in every part of the same plan.

LESSON XXXII.

PLAN OF THE VILLAGE SCHOOL AND PLAYGROUND.

THE boys had drawn plans of the field, the schoolroom, and of the flower-garden. Now they were to make a plan of a larger thing, although on a smaller scale. They went with their father to the school in the village when the school was closed, and asked if they might take a plan of the schoolroom and the playground. The master was kind enough to give them leave; and so they began their task at once.

Their first act, as their father wished, was to find the size of the playground by the outline, which, you have learned, means the line outside. They soon stretched their tape and found that the playground was 120 feet long and 72 feet wide. But what were they to do then? Mr. Goodman said, " I want you to draw this



plan on a piece of paper 5 inches long and 3 inches wide. Now, as the ground is 120 feet long, how many feet will there be in each inch of your paper?"

George, who was smart at figures, soon found that there would be 24 feet to each of the five inches, for 5 times 24 come to just 120. And in the same way he saw that each of the 3 inches in width would mean 24 feet on the plan, for 3 times 24 come to just 72, which was the number of feet in the width of the ground.

It was easy to draw two lines 5 inches long and 3 inches apart, with lines across the ends; and, this being done, the outline of the ground was formed.

The schoolroom was found to measure 48 feet long and 36 feet wide, so that 2 inches one way and an inch and a half the other gave the size of the schoolroom. Then they had to think as to where they should place the schoolroom on the plan.

"I see," said Fred. "The building is close to the left side of the ground, and it is 9 feet from the back of the ground." He then made small dots all round the edges of the plan o the ground—one for every yard or every 3 feet He could thus count the number of feet fo the schoolroom, and find the place on which it was to stand. And in this way he could put in 3 rows of desks, each 6 feet long, with a path 3 feet wide between them and all round.

When he had placed these desks for the boys, and a large desk for the master, and 3 small ones for the pupil-teachers, he felt almost proud of what he had done. He saw, as he had never seen before, how a plan is made to show the *places* for things, and not to be looked upon as a picture.

---

kind **piece** **smart**

stretch-ed **man-y** **num'-ber**
build'-ing **pu'-pil** **teach'-er**

LEARN.

The plan of a large piece of ground may take up less room on the paper than the plan of a small piece of ground, because it may be drawn to a smaller scale.

LESSON XXXIII.

PLAN OF THE VILLAGE.

We see how the boys learned, step by step, to make plans. First, they found the size and shape of a field. Next, they made a plan of the same field, and learned how to mark the proper places for the pond, the trees, and the little stream. Then they marked on the paper a plan of the flower-garden, and, next, one of their own schoolroom. Each of these tasks was a little harder than the former one. But the boys liked the work so much that it seemed almost like play to them.

And so we find all through life, if we are pleased with the things that we do, and go step by step, our tasks are easy and pleasant.

The plan of the village school which the boys made had more work in it than the former ones; but, when they set to with a right good will, they soon found it easy.

As they had found out how to make the plan of the village school, they were sure they could do the same with the school and the places about it, and then with the whole village itself.

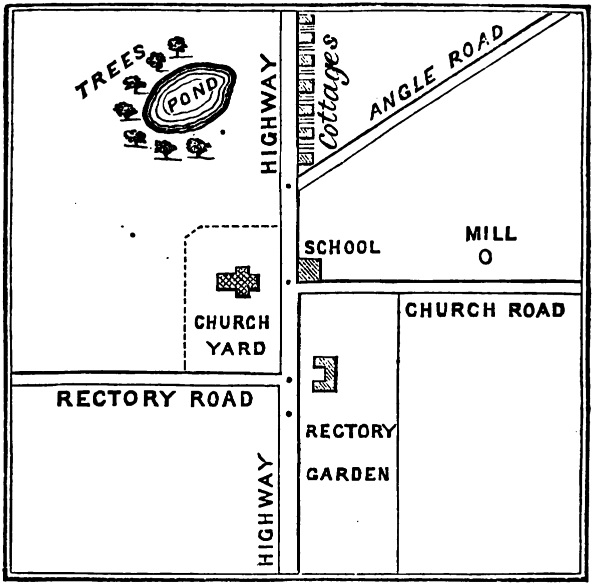
"Do you know the size of the village?" asked the father.

"Yes," said George; "it is nearly a square. It is about a mile each way."

"Well," Mr. Goodman asked, "what size will you make your plans? I have told you that we can make our plans on what scale we think fit; that is, we may make an inch to mean a hundred yards, or a mile, or even 50 miles or more.

Fred thought that three inches to the mile would be the right size in this case. That made the plan three inches each way.

This is the plan which the boys made:



We can see from this plan that there is a straight road through the village from south to north. To make this road on the plan was very easy. Then, as there are two cross-roads just in the middle of the village, the boys made a road to the left, and one to the right, leading out of the main road. The one leading to the west is named Rectory Road; the one leading to the east is known as Church Road. Then a broad road at the north end of the village is called Angle Road because it goes off from the main street at a slant. The church stands close by Church Road. And the rector's house is at the end of Rectory Road.

Then all the rest is done with ease. We shall not need to measure all the gardens and cottages and fields, for we can see at a glance how their places were found, when pains have been taken to measure them.

whole
square
scale

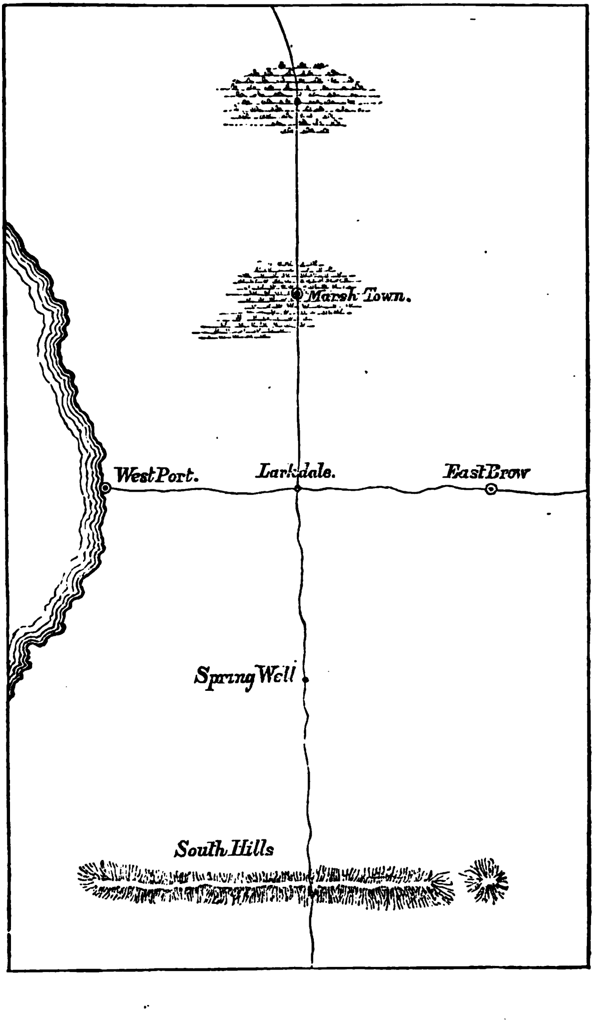
flow'-er
prop'-er
al'-most
form'-er
vil'-lage
pleas'-ant

LESSON XXXIV.

MAP OF THE VILLAGE AND OTHER PLACES AROUND.

Mr. Goodman, after he had praised the work of his boys, asked them to make a map. "A map," he said, "is like a plan, only it is a plan of a large space. But then, you know, you cannot put in all the small parts. You can only mark the towns and woods and mountains, and such like, which are a long way one from the other. A map is, in most cases, a plan in which you mark the towns and villages, or perhaps only the countries."

The boys then took a piece of paper of the same size they had used before. But now they had to make *one inch* to mean *ten miles*. They marked their own little village in the middle, which you will see on the map under the


Marsh Town.
West Port.
Larkdale.
East Brow
Spring Well
South Hills

name Larkdale. As there was a town in a low marshy district, called Marsh Town, ten miles to the north in a straight line, they marked it just one inch to the north. And as there was a village in a wood, ten miles farther north, this they marked just one inch to the north of Marsh Town.

"You have been with me to these hills, twenty miles to the south of Larkdale," said the father; "how far down on the map will you put them?"

"Just two inches," replied Fred, for he knew that if ten miles meant one inch on the map, twenty miles must be marked two inches from the place where the village stood. Thus the boys marked some hills, which were called South Hills, at the south end of their map; and as there was a spring or a well, known far and wide, just about half-way on the road, they marked Spring Well between the two.

As there is a port on the seaside, to the west, called West Port, they put it down an inch to the left, or the west, which is one inch from the centre, and East Brow the same distance to the east.

---

moun'-tain
coun'-tries
far'-ther

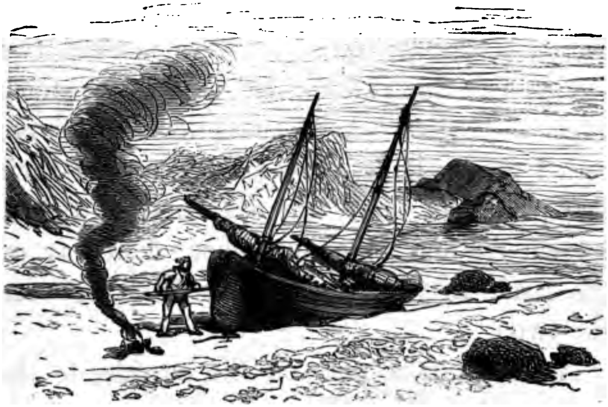
---

vil'-lage
sea-side'
be-tween'
cen'-tre
fa'-ther
dis-tance

LEARN.

A plan of a very large space of ground is called a map.

On a map only the chief features of the district are shown.



LESSON XXXV.

GENERAL MAPS.

Mr. Goodman said, "When we show a small space—say a village—on the map, it is easy to mark where the streets, the houses, and the gardens stand; but if we show a whole country in the same space, only the mountains and large lakes, and some of the rivers and towns, can be marked."

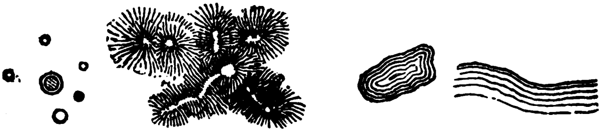
People who go up in a balloon can see houses and streets at first; but, as they rise higher and look over a wider space, they see only large things, such as mountains and rivers and towns.

As the earth appears to them, so is a map of a large district. Things that appear largest, such as mountain chains, are drawn largest; towns appear small, and are marked by little rings. Broad rivers are marked with a thick line, and narrow ones with a thin stroke; the

broadest end (the mouth) of the river is thicker than the narrow end (the source

“On a map,” said Mr. Goodman, “tu of mountains and of mountain ranges a white, and their sloping sides are shaded. the steeper the sides the darker is the sha so that very dark lines show the mountai be very high and steep, and fainter m mean that they are not so high nor so st And lakes and seas are marked with w lines, like the waves of the sea, or the ripp on water made by the wind. Large towns mostly marked with rings, and small tow with dots. Rivers have lines thin at t source, but thicker and thicker as the rive widen, till they reach the mouth.”

Here Mr. Goodman made drawings to show his meaning:



In a map, rivers are marked by thick or thin lines, towns by rings or dots, mountains by shading, and lakes and seas by wavy lines.